

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Mark Hamm et al.

Application No.: 10/689,767

Confirmation No.: 4545

Filed: October 20, 2003

Art Unit: 3737

For: TRANSDUCER/SENSOR ASSEMBLY

Examiner: J. Lamprecht

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is accompanied by a Petition for Extension of Time in furtherance of the Notice of Appeal filed in this case on April 21, 2010.

The Director is hereby authorized to charge the required fees or credit any overpayment to Deposit Account Number 50-0320.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1205.2:

- | | |
|------|-----------------------------------------------|
| I. | Real Party In Interest |
| II. | Related Appeals and Interferences |
| III. | Status of Claims |
| IV. | Status of Amendments |
| V. | Summary of Claimed Subject Matter |
| VI. | Grounds of Rejection to be Reviewed on Appeal |
| VII. | Argument |

VIII.	Claims
Appendix A	Claims
Appendix B	Evidence
Appendix C	Related Proceedings

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is Boston Scientific Corporation. Boston Scientific Scimed, Inc., the assignee of the present patent application, is a wholly owned subsidiary of Boston Scientific Corporation.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 30 claims pending in application.

B. Current Status of Claims

1. Claims canceled: 2-3, 11, and 17
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 1, 4-10, 12-16, and 18-34
4. Claims allowed: None
5. Claims rejected: 1, 4-10, 12-16, and 18-34

C. Claims On Appeal

The claims on appeal are claims 1, 4-10, 12-16, and 18-34

IV. STATUS OF AMENDMENTS

Applicants did not file amendments in response to the Final Office Action mailed December 8, 2009. Accordingly, the claims enclosed herein as Appendix A incorporate all of the amendments.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 recites an imaging catheter comprising a sheath (see, for example, paragraph [0016] and reference number 101 of Figure 1a) comprising distal and proximal ends and defining a lumen (see, for example, paragraphs [0016] and [0019] and reference number 105 of Figure 1a). The imaging catheter also comprises an imaging device (see, for example, paragraphs [0022], [0023], and [0026] and reference number 165 of Figure 1a and reference number 180 of Figure 1d) located within the lumen of a distal portion of the sheath; and a sensor (see, for example, paragraphs [0016]-[0019] and reference number 225 of Figures 1a and 1d) coupled to the imaging device within the lumen and positioned proximal to the imaging device (see, for example, paragraph [0017] and Figure 1 which shows the sensor 225 before the imaging device 165). The sensor comprises a conductive coil (see, for example, paragraphs [0016]-[0019] and reference number 225 of Figures 1a and 1d) and the sensor is configured to communicate with a medical positioning system (see, for example, paragraphs [0017] and [0026]). The imaging catheter further comprises a solid core (see, for example, paragraphs [0018] and [0023] and reference number 230 of Figure 1a) around which the conductive coil is wrapped; a solid, non-conductive material (see, for example, paragraphs [0019] and [0023] and reference number 255 of Figures 1a and 1c) disposed over the sensor; and one or more traces (see, for example, paragraphs [0023] and [0025] and reference number 270 of Figures 1a and 1c) formed over the sensor and disposed in the solid, non-conductive material. The one or more traces are configured to electrically couple the imaging device to an energy source (see, for example, paragraph [0026] and reference number 530 of Figure 1d).

Claim 16 recites an imaging apparatus for use within the lumen of a blood vessel comprising a coaxial cable (see, for example, paragraphs [0020]-[0026] and reference number 110 of Figures 1a-1c) having an inner wire (see, for example, paragraphs [0020], [0022], and [0023] and reference number 120 of Figures 1b and 1c) and an outer wire (see, for example, paragraphs [0020], [0022], and [0023] and reference number 130 of Figures 1b and 1c). The imaging apparatus further comprises a drive shaft coil (see, for example, paragraph [0021] and reference number 210 of Figure 1a), having distal and proximal ends, surrounding the coaxial cable; and a sensor coil (see, for example, paragraphs [0016]-[0019] and reference number 225 of Figures 1a and 1d) disposed distal

to the drive shaft coil. The sensor coil is configured to communicate with a medical positioning system (see, for example, paragraphs [0017] and [0026]). The imaging apparatus also comprises a non-conductive layer (see, for example, paragraphs [0019] and [0023] and reference number 255 of Figures 1a and 1c) of epoxy surrounding the sensor coil; an inner core (see, for example, paragraphs [0018] and [0023] and reference number 230 of Figure 1a) around which is wrapped the sensor coil; an imaging device (see, for example, paragraphs [0022], [0023], and [0026] and reference number 165 of Figure 1a and reference number 180 of Figure 1d), having first and second terminals, disposed distal to the sensor coil (see, for example, paragraph [0017] and Figure 1 which shows the imaging device 165 after the sensor 225); and first and second traces (see, for example, paragraphs [0023] and [0025] and reference number 270 of Figures 1a and 1c) residing in the non-conductive layer of epoxy. One of the inner and outer wires of the coaxial cable is coupled with one of the first and second terminals of the imaging device via one of the first and second traces, and the other of the inner and outer wires of the coaxial cable is coupled with the other of the first and second terminals of the imaging device via the other of the first and second traces (see, for example, paragraphs [0023] and [0025] and Figures 1a, 1c, and 1d).

Claim 27 recites a medical imaging system comprising a medical positioning system (see, for example, paragraphs [0017] and [0026]) and an imaging catheter (see, for example, paragraphs [0016] and [0019]) adapted to be inserted into a lumen of a body. The imaging catheter comprises a catheter (see, for example, paragraph [0016] and reference number 101 of Figure 1a) having distal and proximal ends and a lumen (see, for example, paragraphs [0016] and [0019] and reference number 105 of Figure 1a); an imaging device (see, for example, paragraphs [0022], [0023], and [0026] and reference number 165 of Figure 1a and reference number 180 of Figure 1d) located within the lumen of a distal portion of the catheter; and a sensor (see, for example, paragraphs [0016]-[0019] and reference number 225 of Figures 1a and 1d) coupled to the imaging device within the lumen of the catheter and located proximal to the imaging device (see, for example, paragraph [0017] and Figure 1 which shows the sensor 225 before the imaging device 165). The sensor is configured to communicate with the medical positioning system (see, for example, paragraphs [0017] and [0026]). The imaging catheter further comprises a non-conductive material (see, for example, paragraphs [0019] and [0023] and reference number 255 of Figures 1a and 1c)

surrounding the sensor and one or more conductive traces (see, for example, paragraphs [0023] and [0025] and reference number 270 of Figures 1a and 1c) formed within the non-conductive material. The one or more conductive traces are configured to electrically couple the imaging device with an energy source (see, for example, paragraph [0026] and reference number 530 of Figure 1d).

Claim 24 is a dependent claim and is discussed independently in Section VII. Claim 24 depends from claim 21 which depends from claim 20 which depends from claim 16. Accordingly, a summary of dependent claims 20, 21, and 24 is also provided.

Claim 20 recites that the imaging device is an imaging transducer (see, for example, paragraphs [0022], [0023], and [0026] and reference number 165 of Figure 1a and reference number 180 of Figure 1d).

Claim 21 recites that the imaging transducer comprises an acoustic lens (see, for example, paragraphs [0016], [0025], and [0026] and reference number 170 of Figure 1a) coupled with a piezoelectric crystal layer (see, for example, paragraphs [0016] and [0026] and reference number 180 of Figure 1a), and the piezoelectric crystal layer is coupled with a backing material (see, for example, paragraphs [0016], [0025], and [0026] and reference number 190 of Figure 1a).

Claim 24 recites that the backing material comprises silver particles in an epoxy substrate (see, for example, paragraph [0016]).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1, 4, 5, 7-10, 12-15, 27 and 29-34 are patentable over U.S. Patent No. 6,409,370 to Ben-Haim et al. ("Ben-Haim") in view of U.S. Patent No. 5,947,905 to Hadjicostis et al. ("Hadjicostis") and U.S. Patent Application Publication No. 2005/0042424 to Frey et al. ("Frey"); whether claim 6 is patentable over Ben-Haim in view of Hadjicostis, Frey, and U.S. Patent No. 6,019,726 to Webb ("Webb"); and whether claim 28 is patentable over Ben-Haim in view of Hadjicostis, Frey, and U.S. Patent No. 4,917,097 to Proudian et al. ("Proudian").

2. Whether claims 16 and 18-26, are patentable over Ben-Haim in view of Hadjicostis, Frey, and U.S. Patent No. 6,019,726 to Webb ("Webb").

3. Whether claim 24 is patentable over Ben-Haim in view of Hadjicostis, Frey, and Webb

VII. ARGUMENT

The organization of the arguments presented hereinafter follows the organization of the grounds for rejection to be reviewed on appeal set forth above. In particular, a separate boldfaced heading for each ground presented for review follows.

1. Claims 1, 4, 5, 7-10, 12-15, 27 and 29-34 are patentable over U.S. Patent No. 6,409,370 to Ben-Haim et al. ("Ben-Haim") in view of U.S. Patent No. 5,947,905 to Hadjicostis et al. ("Hadjicostis") and U.S. Patent Application Publication No. 2005/0042424 to Frey et al. ("Frey"); claim 6 is patentable over Ben-Haim in view of Hadjicostis, Frey, and U.S. Patent No. 6,019,726 to Webb ("Webb"); and claim 28 is patentable over Ben-Haim in view of Hadjicostis, Frey, and U.S. Patent No. 4,917,097 to Proudian et al. ("Proudian").

Claim 1 recites a sensor positioned proximal to an imaging device (and having a conductive coil), a solid non-conductive material disposed over the sensor, and one or more traces formed over the sensor and disposed in the solid, non-conductive material. Claim 27 recites a sensor located proximal to an imaging device, a non-conductive material surrounding the sensor, and one or more conductive traces formed within the non-conductive material.

The Final Office Action, mailed December 8, 2009, identifies the coils 34 of Ben-Haim as the recited sensor of claims 1 and 27. Final Office Action, p. 2-3. As acknowledged by the Final Office Action, Ben-Haim does not teach or suggest a non-conductive material formed over or surrounding the sensor. Final Office Action, p. 3. Moreover, Ben-Haim does not teach or suggest traces that disposed in or formed within the non-conductive material.

The Final Office Action turns to Hadjicostis and asserts that "Hadjicostis et al. discloses an embodiment comprising a non-conductive material disposed over the conductive primary layer or core which comprises the circuit coils." Final Office Action, p. 3-4. However, Hadjicostis does not teach such an arrangement. Hadjicostis does not appear to teach or suggest a "circuit coil" as asserted by the Office Action. The term "coil" does not appear in the text of Hadjicostis. The cited passage of Hadjicostis merely states that a primary matching layer 80a may be bonded to a piezoelectric element 90a, which may be then bonded to flex circuit 20. Hadjicostis, Col. 8:10-37. The piezoelectric element 90a is part of an array of piezoelectric transducer elements that are

analogous to the imaging device described in the present claims. The piezoelectric element 90a is not part of a sensor. Hadjicostis does not teach or disclose a sensor that is positioned or located proximal to the imaging device. Moreover, Hadjicostis does not teach or suggest a sensor that comprises a conductive coil as recited in claim 1.

Frey also discusses modifying matching layers that are used in ultrasonic transducer architectures. Frey, Col. 1:5-8. Frey does not mention a sensor. Thus, neither Frey nor Hadjicostis teach or suggest a sensor positioned or located proximal to the imaging device. Neither reference discusses a sensor having a conductive coil. One of skill in the art would not turn to Hadjicostis or Frey to provide a modification of the sensor and surrounding components of Ben-Haim as asserted in the Office Action.

The Final Office Action maintains that “sensor or medical positioning sensor would encompass both imaging transducers and RF or magnetic/squid elements. While these sensors are *not* ‘coils’ *per-se*, the inclusion of traces or epoxy on a sensor element intended for an in-vivo environment is surely taught by Frey and Hadjicostis.” Final Office Action, p. 6, emphasis added. However, claim 1 positively recites a sensor comprising a conductive coil. The cited references do not teach or suggest these elements.

In response to these arguments, the Advisory Action, mailed March 17, 2010, asserts:

It can first be appreciated that Ben-Haim at least discloses an imaging device in a distal portion of a catheter, a sensor coupled electronically to the imaging device and proximal to the device and that the sensor comprises coils..., and that the sensor at least has some sort of trace to transmit the signals. The reference to Hadjicostis discloses another catheter structure which comprises position markers in addition to an ultrasound transducer stack. Hadjicostis is used as a teaching reference due to the fact that the position element of Hadjicostis is coupled to the imaging transducers and actually is integrated into the layers of the circuitry of the ultrasound transducer. The teaching, along with the matching layer materials teaches that a position detecting element and ultrasound transducer can be incorporated into the same stack/circuitry....

The disclosure of Hadjicostis is not relevant to the present claims because the “position markers” are “integrated into the layers of the circuitry of the ultrasound transducer.” The present

claims recite that the sensor is positioned proximal to the imaging device (i.e., before the imaging device as illustrated in Figure 1a of the present patent application). The “position markers” of Hadjicostis (presumably, the Advisory Action is referring to the radio-opaque markers 108a, 108b of Hadjicostis) have solid non-conductive material and traces disposed over or surrounding them because they are part of the ultrasound transducer stack. If the “position markers” were positioned proximal to the transducer stack (as required in claims 1 and 27) there is no indication that non-conductive material and traces would be disposed or formed over them because they would no longer be part of the transducer stack. Moreover, the coils of Ben-Haim could not be positioned within the transducer stack, as per Hadjicostis, and, therefore, one of skill in the art would not find it obvious to modify the device of Ben-Haim in view of Hadjicostis as suggested in the Office Action. In other words, neither Hadjicostis nor Frey, alone in or combination, teach or suggest the recited traces, non-conductive material, and sensor positioned or located proximal to the imaging device. The “non-conductive material” and “traces” of Hadjicostis and Frey identified in the Final Office Action and Advisory Action are part of the transducer stack and none of the cited references teach or suggest positioning these components in association with a sensor that is not part of the transducer stack (i.e., a sensor that is located or positioned proximal to the imaging device).

Thus, the combination of Ben-Haim, Hadjicostis, and Frey do not teach or suggest a sensor positioned or located proximal to an imaging device, non-conductive material disposed over or surrounding the sensor, and one or more traces formed over the sensor or formed within the non-conductive material, as recited in claims 1 and 27.

For at least these additional reasons, claims 1 and 27, as well as claims 4-10, 12-15, and 28-34 which depend therefrom, are patentable over the cited references. Applicants respectfully request withdrawal of these rejections.

2. Claims 16 and 18-26, are patentable over Ben-Haim in view of Hadjicostis, Frey, and U.S. Patent No. 6,019,726 to Webb ("Webb").

Claim 16 recites a sensor coil, a non-conductive layer of epoxy surrounding the sensor coil, first and second traces residing in the non-conductive layer of epoxy, and an imaging device disposed distal to the sensor coil and coupled to a coaxial cable via the first and second traces.

The Final Office Action, mailed December 8, 2009, identifies the coils 34 of Ben-Haim as the recited sensor coil of claim 16. Final Office Action, p. 2-4. As acknowledged by the Final Office Action, Ben-Haim does not teach or suggest a non-conductive material or non-conductive layer of epoxy surrounding the sensor coil. Final Office Action, p. 3. Moreover, Ben-Haim does not teach or suggest traces residing in the non-conductive material.

The Final Office Action turns to Hadjicostis and asserts that "Hadjicostis et al. discloses an embodiment comprising a non-conductive material disposed over the conductive primary layer or core which comprises the circuit coils." Final Office Action, p. 3-4. As explained above with respect to claims 1 and 27, Hadjicostis does not teach such an arrangement. Hadjicostis does not appear to teach or suggest a "circuit coil" as asserted by the Office Action. The term "coil" does not appear in the text of Hadjicostis. Likewise, Frey also discusses modifying matching layers that are used in ultrasonic transducer architectures. Frey, Col. 1:5-8. Frey does not mention a sensor coil. Thus, both Frey and Hadjicostis are directed to the configurations of ultrasound transducers, not a sensor coil.

In response to these arguments, the Advisory Action, mailed March 17, 2010, asserts:

It can first be appreciated that Ben-Haim at least discloses an imaging device in a distal portion of a catheter, a sensor coupled electronically to the imaging device and proximal to the device and that the sensor comprises coils..., and that the sensor at least has some sort of trace to transmit the signals. The reference to Hadjicostis discloses another catheter structure which comprises position markers in addition to an ultrasound transducer stack. Hadjicostis is used as a teaching reference due to the fact that the position element of Hadjicostis is coupled to the imaging transducers and actually is integrated into the layers of the circuitry of the ultrasound transducer. The teaching, along with the matching layer

materials teaches that a position detecting element and ultrasound transducer can be incorporated into the same stack/circuitry....

The disclosure of Hadjicostis is not relevant to the present claims because the “position markers” are “integrated into the layers of the circuitry of the ultrasound transducer.” Claim 16 recites that the imaging device is disposed distal to the sensor coil (i.e., after the sensor coil). The “position markers” of Hadjicostis (presumably, the radio-opaque markers 108a, 108b of Hadjicostis) have solid non-conductive material and traces disposed or formed over them because they are part of the ultrasound transducer stack. If the transducer stack was disposed distal to the “position markers” (as required in the claims) there is no indication that non-conductive material and traces would be disposed or formed over them because they would no longer be part of the transducer stack. Moreover, the coils of Ben-Haim could not be positioned within the transducer stack, as per Hadjicostis, and, therefore, one of skill in the art would not consider modifying the device of Ben-Haim in view of Hadjicostis as suggested in the Office Action.

Thus, the combination of Ben-Haim, Hadjicostis, and Frey do not teach or suggest an imaging device disposed distal to a sensor, a non-conductive layer of epoxy surrounding the sensor coil, and traces within the non-conductive layer of epoxy, as recited in claim 16.

For at least these additional reasons, claim 16, as well as claims 18-26 which depend therefrom, are patentable over the cited references. Applicants respectfully request withdrawal of these rejections.

3. Claim 24 is patentable over Ben-Haim in view of Hadjicostis, Frey, and Webb

Claim 24 recites that the backing material comprises silver particles in an epoxy substrate. Claim 24 depends from claim 21 which depends from claim 20 which depends from claim 16. Claim 24 is patentable for at least the reasons described above with respect to claim 16.

In addition, none of the cited references teach or suggest a backing material with silver particles in an epoxy substrate. Although the Final Office Action does assert that Hadjicostis discloses “the use of epoxy layering”, there is no mention in the Final Office Action about silver particles. Accordingly, the Final Office Action fails to provide a *prima facie* case of obviousness because the Final Office Action fails to indicate any basis for the obviousness of a backing material with silver particles in an epoxy substrate.

For at least these additional reasons, claim 24 is patentable over the cited references. The Applicants respectfully request reversal of the rejection of claim 24.

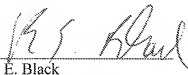
VIII. CLAIMS

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A include all amendments made to the claims.

Dated: November 19, 2010

Respectfully submitted,

By



Bruce E. Black

Registration No.: 41,622
FROMMER LAWRENCE & HAUG LLP.
745 Fifth Avenue
New York, New York 10151
(206) 336-5668
(212) 588-0500 (Fax)
Attorneys/Agents For Applicant

APPENDIX A

Claims Involved in the Appeal of U.S. Patent Application Serial No. 10/689,767:

1. An imaging catheter comprising:
 - a sheath comprising distal and proximal ends and defining a lumen;
 - an imaging device located within the lumen of a distal portion of the sheath;
 - a sensor coupled to the imaging device within the lumen and positioned proximal to the imaging device, wherein the sensor comprises a conductive coil, and wherein the sensor is configured to communicate with a medical positioning system;
 - a solid core around which the conductive coil is wrapped;
 - a solid, non-conductive material disposed over the sensor; and
 - one or more traces formed over the sensor and disposed in the solid, non-conductive material, wherein the one or more traces are configured to electrically couple the imaging device to an energy source.
- 2-3. (Canceled)
4. The imaging catheter of claim 1, wherein the solid, non-conductive material comprises a potting layer surrounding the sensor, wherein the one or more traces are formed in the potting layer.
5. The imaging catheter of claim 1, further comprising a first wire and a second wire that are proximally coupled with the sensor, wherein the one or more traces are electrically coupled with the first wire and second wire.
6. The imaging catheter of claim 5, further comprising a driveshaft surrounding the first and second wires.

7. The imaging catheter of claim 5, wherein the first and second wires are configured as a coaxial cable having an inner cable and an outer cable, which are respectively the first and second wires.

8. The imaging catheter of claim 5, wherein the first and second wires are configured as a shielded, twisted pair.

9. The imaging catheter of claim 1, wherein the sensor is adapted to communicate with a medical positioning system.

10. The imaging catheter of claim 1, wherein the solid core comprises a solid magnetic core surrounded by the sensor.

11. (Canceled)

12. The imaging catheter of claim 1, wherein the imaging device is an imaging transducer.

13. The imaging catheter of claim 12, wherein the imaging transducer comprises an acoustic lens coupled with a layer of piezoelectric crystal, the piezoelectric crystal being coupled with a backing material.

14. The imaging catheter of claim 13, wherein the backing material comprises a tungsten material.

15. The imaging catheter of claim 1, wherein the imaging device is in parallel with the sensor.

16. An imaging apparatus for use within the lumen of a blood vessel comprising:
a coaxial cable having an inner wire and an outer wire;
a drive shaft coil, having distal and proximal ends, surrounding the coaxial cable;
a sensor coil disposed distal to the drive shaft coil, wherein the sensor coil is configured to communicate with a medical positioning system;
a non-conductive layer of epoxy surrounding the sensor coil;
an inner core around which is wrapped the sensor coil;
an imaging device, having first and second terminals, disposed distal to the sensor coil; and
first and second traces residing in the non-conductive layer of epoxy;
wherein one of the inner and outer wires of the coaxial cable is coupled with one of the first and second terminals of the imaging device via one of the first and second traces, and the other of the inner and outer wires of the coaxial cable is coupled with the other of the first and second terminals of the imaging device via the other of the first and second traces.

17. (Cancelled).

18. The imaging apparatus of claim 16, wherein the inner core is a solid magnetic core.

19. The imaging apparatus of claim 16, wherein the inner core is a high permeability core.

20. The imaging apparatus of claim 16, wherein the imaging device is an imaging transducer.

21. The imaging apparatus of claim 20 wherein the imaging transducer comprises an acoustic lens coupled with a piezoelectric crystal layer, and the piezoelectric crystal layer is coupled with a backing material.

22. The imaging apparatus of claim 21, wherein the acoustic lens is electrically coupled with one of the first and second terminals and the backing material is electrically coupled with the other of the first and second terminals.

23. The imaging apparatus of claim 21, wherein the backing material comprises tungsten.

24. The imaging apparatus of claim 21, wherein the backing material comprises silver particles in an epoxy substrate.

25. The imaging apparatus of claim 20, further comprising a sheath having a lumen, wherein the sensor coil and the imaging device are disposed in the lumen of the sheath; and a sonolucent media disposed in the lumen of the sheath, wherein at least one of the first and second terminals is insulated from the sonolucent media in contact with the imaging transducer.

26. The imaging apparatus of claim 16 wherein the sensor coil is adapted to communicate with an external medical positioning system.

27. A medical imaging system comprising:
a medical positioning system; and
an imaging catheter adapted to be inserted into a lumen of a body, the imaging catheter including:

- a catheter having distal and proximal ends and a lumen;
- an imaging device located within the lumen of a distal portion of the catheter;
- a sensor coupled to the imaging device within the lumen of the catheter and located proximal to the imaging device, wherein the sensor is configured to communicate with the medical positioning system;
- a non-conductive material surrounding the sensor; and

one or more conductive traces formed within the non-conductive material, wherein the one or more conductive traces are configured to electrically couple the imaging device with an energy source.

28. The medical imaging system of claim 27, wherein the non-conductive material comprises parylene.

29. The medical imaging system of claim 27, wherein the non-conductive material comprises epoxy.

30. The medical imaging system of claim 27, wherein the imaging device is an imaging transducer.

31. The medical imaging system of claim 30 wherein the imaging transducer comprises an acoustic lens coupled with a layer of piezoelectric crystal, the piezoelectric crystal being coupled with a backing material.

32. The medical imaging system of claim 27, wherein the sensor includes a conductive wire wrapped around a solid magnetic core.

33. The medical imaging system of claim 27, wherein the catheter includes a driveshaft proximal to the sensor.

34. The medical imaging system of claim 27, wherein the imaging device is in parallel with the sensor.

APPENDIX B

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the examiner is being submitted.

APPENDIX C

No related proceedings are referenced in II. above, hence copies of decisions in related proceedings are not provided.